U.S. Army Corps
of Engineers

GULF INTRACOASTAL WATERWAY
LAGUNA MADRE, TEXAS
MAINTENANCE DREDGING

Draft Environmental Impact Statement

Galveston District
Southwestern Division

APRIL 2003

DRAFT ENVIRONMENTAL IMPACT STATEMENT
MAINTENANCE DREDGING OF THE
GULF INTRACOASTAL WATERWAY
LAGUNA MADRE, TEXAS
NUECES, KLEBERG, KENEDY, WILLACY,
AND CAMERON COUNTIES, TEXAS

Prepared for:

U.S. Army Corps of Engineers
Galveston District
Southwestern Division
2000 Fort Point Road
Galveston, Texas 77550

Prepared by:

PBS&J
206 Wild Basin Road
Suite 300
Austin, Texas 78746-3343

March 2003

Printed on recycled paper

ERRATA SHEET FOR

DRAFT ENVIRONMENTAL IMPACT STATEMENT
MAINTENANCE DREDGING OF THE
GULF INTRACOASTAL WATERWAY
LAGUNA MADRE, TEXAS
NUECES, KLEBERG, KENEDY, WILLACY,
AND CAMERON COUNTIES, TEXAS

THERE ARE PROBLEMS WITH THE PAGE NUMBERS FOR MOST OF THE COLOR FIGURES. THEY ARE CORRECT IN THE TABLE OF CONTENTS BUT NOT ON THE FIGURES THEMSELVES. PLEASE IGNORE THESE PAGE NUMBERS. THEY WILL BE CORRECTED IN THE FINAL ENVIRONMENTAL IMPACT STATEMENT.

EXECUTIVE SUMMARY

ES.1 DESCRIPTION

The 1975 Environmental Impact Statement (EIS) for Maintenance Dredging Gulf Intracoastal Waterway Texas Section – Main Channel and Tributary Channels identified and evaluated the environmental impacts of continued maintenance dredging of the Texas Section of the Gulf Intracoastal Waterway (GIWW) and tributary channels. In the 1975 EIS, alternatives were addressed that would reduce environmental effects while enhancing economic and social conditions.

In November 1989, the U.S. Army Corps of Engineers (USACE) completed a Reconnaissance Report including an initial appraisal of the entire Texas section of the GIWW. The question of the inadequacy of the 1975 EIS was first raised by an interagency task force (Gulf Intracoastal Waterway Maintenance Dredging Working Group) comprising the U.S. Fish and Wildlife Service (FWS), National Marine Fisheries Service (NMFS), National Park Service (NPS), Texas General Land Office (GLO), and Texas Parks and Wildlife Department (TPWD). Their issue paper recommended that a supplemental EIS be prepared.

Subsequently, the first phase of additional Section 216 of the 1970 Flood Control Act (P.L. 91-611) studies was initiated in 1993 focusing on problems and concerns along the lower reach of the existing, Federally maintained, Texas section of the GIWW. The USACE Galveston District was responsible for the general management of that study, with the State of Texas, represented by the Texas Department of Transportation (TxDOT), acting as the local sponsor. In addition, various other Federal and State agencies provided considerable input during this study. The Section 216 study concluded that an optimization study of channel dimensions was not in the Federal interest and that an EIS and Dredged Material Management Plan (DMMP) would be pursued under Operations and Maintenance authority.

The recommendations of the task force, coupled with environmental concerns from environmental organizations, and the preliminary findings of the USACE Reconnaissance Report led to the decision to proceed with an EIS and the formation of an Interagency Coordination Team (ICT) to help the USACE to develop the scope of environmental studies. The ICT is composed of representatives from TxDOT, GLO, Texas Commission on Environmental Quality (TCEQ), TPWD, Texas Water Development Board (TWDB), NMFS, U.S. Environmental Protection Agency (EPA), FWS, and USACE. Some of the goals of the ICT were to help the USACE develop the scopes of work for the environmental studies, review and critique the study results, and help the USACE prepare the DMMP and EIS. The ICT also provides a forum for continued coordination on the proposed project through the life of the project and monitoring its environmental success.

Therefore, the purpose of this Draft EIS (DEIS) is to provide information and environmental analysis concerning maintenance dredging of the GIWW through the Laguna Madre using a new management plan.

The Laguna Madre section of the GIWW for the DEIS extends 117 miles from the John F. Kennedy Causeway (JFK Causeway) to the old Queen Isabella Causeway and roughly 1 mile inland on the east and west. The channel dimensions today remain at 12 feet deep by 125 feet wide. The main channel requires maintenance dredging every 23 to 60 months in selected reaches to remove approximately 200,000 cubic yards (cy) to 3 million cy (MCY) of sediment. Maintenance is performed by contracted cutterhead-suction dredges, and materials dredged are placed by hydraulic pipeline on both upland and open-bay placement areas (PAs).

The Laguna Madre is subdivided into two basins referred to as the Upper Laguna Madre (ULM) and the LLM, with the two being separated by the Saltillo Flats (Land Bridge, also referred to as the Land Cut). The ULM reach includes three water exchange passes, generally 5 feet deep by 200 feet wide, which were constructed to improve water circulation and fish migration in an area known locally as The Hole. The LLM reach intersects the GIWW tributary to Port Mansfield (Port Mansfield Channel) and the Tributary Channel to Harlingen via Arroyo Colorado.

The Laguna Madre main channel section currently utilizes 61 existing PAs for contract pipeline placement operations. The proposed Federal action is the modification in management of the dredged material to reduce impacts to the Laguna's resources from maintenance dredging of the GIWW. Periodic maintenance dredging of the Laguna Madre section must be accomplished to prevent shoaling of the channel to depths that would inhibit or curtail navigation.

The current dredged material placement practice for the Laguna Madre section of the GIWW consists primarily of unconfined open-bay placement with upland placement where it crosses the Land Bridge and a few other areas, notably near the mouth of the Arroyo Colorado. The main channel through the Laguna Madre has 63 PAs available, of which 61 are intermittently utilized, directly impacting over 9,000 acres of bay bottom.

Information gathered from a multitude of sources was used to establish a list of the primary concerns that should be addressed during the study process in the Laguna Madre segment of the GIWW. These primary concerns were organized into several key components that are addressed in this DEIS:

- Water and sediment quality
- Coastal community types
- Finfish and shellfish resources
- Wildlife resources
- Threatened and endangered species
- Hazardous, toxic, and radioactive wastes
- Cultural resources
- Socioeconomic resources

ES.2 WATER QUALITY

The most obvious impact of the No-Action alternative to the estuarine water column is turbidity associated with maintenance dredging and placement. Concern has been expressed relative to the impact that the present maintenance dredging practice has on total suspended material and, thus, turbidity. Several studies were recommended by the ICT to address this concern.

One of those studies found that where an association between total suspended solids (TSS) and currents appears to exist, it seems to be governed more by current direction than current speed. The modeling studies showed that small impacts were to be expected from turbidity from open-bay unconfined dredging and placement. Since impacts were shown by the modeling and since there have been documented concerns, open-bay unconfined placement was eliminated to the extent possible, and a seasonal restriction was imposed on the remaining open-bay placement to limit the impacts to seagrass. In the DMMP alternative, use of deflectors to direct the material on non-confined islands, use of deeper water for some open-bay sites, and partially or completely confining other sites would reduce scouring, turbidity, and other associated impacts.

Both the No-Action and DMMP alternatives may or may not affect dissolved oxygen concentrations in the water column at PAs. During studies for this DEIS, it was noted that low oxygen was not found as a concern by studies of the water chemistry of the Laguna Madre.

Water Exchange and Inflows

Neither alternative would impact flows coming into or out of the ULM or the LLM via passes and streams, or flows between the ULM and LLM via the Land Cut.

Salinity

Since neither alternative affects freshwater inflow, evaporation, or water exchange, neither alternative will impact salinity in the Laguna Madre system.

Water Chemistry

Brown Tide

Based on the results of sediment studies conducted for this DEIS, it has been asserted that dredging and dredged placement operations associated with the No-Action alternative and the DMMP alternative may cause or exacerbate brown tide in the Laguna Madre because resuspension of sediments might release a significant amount of NH_4^+ into the water column. Brown tide has adapted to low light, highly turbid waters and preferentially takes up NH_4^+ as a nitrogen source. It has been conjectured that NH_4^+ inputs during dredging events, along with light reduction could replicate the original brown tide event in a localized manner. However, while the brown tide organism is present in the Laguna Madre, maintenance of the GIWW has not been reported to cause brown tide events, since the GIWW was dredged in 1949. The onset of brown tide occurred after severe freezes in 1989 caused a large die-off of

fish and benthos, resulting in high NH_4^+ concentrations and a subsequent collapse in the zooplankton community.

ES.3 SEDIMENT QUALITY

The sediment quality of maintenance material has not been a cause for concern. The DMMP alternative removes more maintenance material from the Laguna Madre system, and makes it preferable to the No-Action alternative from a sediment quality viewpoint.

Toxicity

No indication of toxicity has been determined by past bioassays or bioaccumulation studies; therefore, neither alternative presents a concern from a toxicity testing perspective.

Sediment Budget

Since the DMMP alternative includes less unconfined placement than the No-Action alternative, there should be a reduction in the amount of resuspended maintenance material and a concomitant decrease in shoaling in the affected reaches. This should lead to a reduction in the frequency of dredging. However, only future dredging will determine whether all sources and sinks in such a vast system were, or can be, accurately defined and, thus, the significance that the additional confinement of maintenance material will have on dredging frequency.

ES.4 SPECIAL AQUATIC HABITAT

Submerged Aquatic Vegetation

Potential seagrass loss is expected from dredged maintenance material placement as a result of both direct and indirect effects. Previous studies provide analysis of impacts to the growth and distribution of seagrass as a result of the direct and indirect impacts from maintenance dredging and placement throughout the Laguna Madre. Only placement on terrestrial upland areas or leveed containment areas would totally prevent direct impacts to the seagrass beds, though the conveyance to the upland sites would impact seagrass habitat, along with other estuarine and upland habitat. Overall 1,307 fewer acres of seagrass will be impacted with the DMMP alternative.

Coastal Wetlands

For both the No-Action alternative and the DMMP alternative some wetlands, both low and high salt marsh, will be impacted in the locations where placement will occur. Since the DMMP alternative relies more heavily on upland placement than does the No-Action alternative, to protect seagrasses and expand islands for shorebird use, more impacts to high salt marsh can be expected with the DMMP alternative. There have been no definitive surveys of the Laguna Madre with respect to high and low salt marshes, thus no quantitative numbers can be provided.

Tidal Flats (including Algal Flats)

The No-Action alternative will continue impacting tidal flat habitat with current disposal practices. Impacts to flats will occur in areas associated with the existing emergent disposal islands. This impact will likely be temporary, until the material consolidates. In total, 137.2 acres of tidal flats are expected to be impacted, both inside and outside of the PAs, with the No-Action alternative. The maximum area calculated to be impacted by the DMMP alternative is 87.9 acres, 49.3 acres fewer than with the No-Action alternative.

Open-Water/Reef Habitat

No live oyster reefs occur within the Laguna Madre ecosystem, with the exception of the South Bay population. The nearest PA is located roughly 2.5 miles north and on the other side of the Brownsville Ship Channel from these oysters, and, therefore, adverse impacts are not expected to occur as a result of dredging and dredged material placement operations for either the No-Action or DMMP alternative. Remnant serpulid reefs and coquina rock outcrops are found in the project vicinity, but impacts have not been reported in the past and the DMMP alternative is not expected to impact them.

If the ICT recommends it for placement, an alternative placement site in Emmord's Hole, located west of PA sites 184–189 in deeper, unvegetated water, and discussed in detail in Section 2.11.7, will be considered for future placement operations.

Coastal Shore Areas/Beaches/Sand Dunes

Since ocean placement, beach nourishment, and washover nourishment are not proposed via pipeline, no impacts to these communities are expected with the DMMP alternative, nor would they occur under the No-Action alternative. Should ocean placement occur for material from portions of the GIWW nearest the Mansfield Pass or the Brazos Santiago Pass, placement would take place far enough offshore that impacts to these communities would not be expected. The No-Action alternative will continue placement on islands or upland areas in existing PAs where shorelines occur. Shorelines associated with these islands may be buried with maintenance material; however, erosion will allow the areas to be restored or the shoreline will merely move its relative position and become reestablished, a short-term temporary affect. No negative impacts to sand dunes will occur, however there could be disturbance to beach areas on existing PAs. Again, the specific areas are not known but are small, and the impacts could be permanent or temporary, depending on the location of the beaches and the amount of maintenance material placed.

The preferred alternative (DMMP) will also affect the PAs in the same manner as the No-Action alternative. Impacts to shorelines on the disposal islands will be short-term temporary affects, unless levees include these areas. No negative impacts to sand dunes will occur. There could be disturbance to beach areas, as above. The specific areas are not known but, again, would be small, and the impacts could be permanent or temporary, depending on the location of the beaches, the amount of maintenance material placed on the beach area, and levee construction. Compared with the large area of coastal shore area and beaches in the project area, neither alternative is considered significant.

Upland Grasslands

The No-Action alternative will continue the practice of placement on islands in PAs that support grassland communities. Impacts to these areas may be permanent; long-term temporary; or short-term temporary depending on the depth of the maintenance material placed on the island and frequency of dredging cycles. The upland PAs will revegetate without frequent maintenance material placement. The DMMP alternative will also not impact any mainland grassland communities. As with the No-Action alternative, there will be impacts to grassland communities on islands inside the PAs.

ES.5 FINFISH AND SHELLFISH RESOURCES

Although water column turbidity would increase in open-bay habitats during dredging activities, such effects are usually temporary and local. At PAs where levees are proposed to be built, there would be one-time water column turbidity increases during construction. Finfish and shellfish communities are altered over time; however, there are indications that mobile organisms are able to respond quickly to dredged material placement. Notwithstanding the potential harm to some individual organisms, compared with the existing condition, no significant impacts on finfish or shellfish populations are anticipated from the maintenance dredging and placement operations for the No-Action alternative or the DMMP alternative.

Repeated dredging and placement operations may temporarily reduce the quality of recreational and commercial fisheries in the vicinity of dredging operations. This may result from decreased water quality and increased turbidity during dredging as well as from a loss of attractiveness to game fish resulting from loss of benthic prey. Impacts would be greater in the ULM where most commercial fishing occurs. There is the possibility under the DMMP alternative that Emmord's Hole, a prime recreational fishing spot in the ULM, would be used as a dredged material disposal site. However, this site would only be used as a last choice alternative. The impacts from the No-Action and DMMP alternatives to both boat and wade-bank fishing would be temporary, potentially resulting in local disturbances, particularly along the edges of the channels and emergent dredged material PAs. After maintenance dredging is completed, these areas should return to pre-dredging conditions. Commercial fishing for shellfish in the Laguna Madre is very limited, therefore no impacts are expected for the No-Action alternative or the DMMP alternative.

Due to the reproductive capacity and natural variation in phytoplankton populations, the impacts of dredged material placement within the project area are not expected to be significant for the No-Action alternative or the DMMP alternative. At PAs where levees will be built, there would be one-time water column turbidity increases during construction but long-term decreases.

Since there would be fewer dredged material plumes with the DMMP alternative, any impacts from turbidity on filter-feeding organisms would be reduced with this alternative in comparison to the No-Action alternative.

Inside the PAs, there will be more impacts to open-bay bottom with the DMMP alternative, relative to the No-Action alternative, as some PAs are expanded and enclosed in levees. Overall,

115 more acres of open-bay bottom will be removed from the ecosystem by the DMMP alternative by fully confining more PAs. Given the large amount of open-water habitat in the Laguna Madre, this is not considered a significant impact, especially considering the reduction in turbidity and in impacts to seagrasses and algal/sand flats as an overall result of implementation of the DMMP alternative.

Approximately 4,887 acres of open water, based on open-bay (unvegetative) bottom impacts, would be affected by the DMMP alternative, which is 115 more than the No-Action alternative. However, the DMMP alternative proposes to reduce impacts to submerged aquatic vegetation (SAV) by 1,307 acres, relative to the No-Action alternative, using dredged material in a manner recommended by the ICT. Thus, impacts to adult and juvenile brown, white, and pink shrimp; red drum; and adult gray snapper would be minimized by reducing impacts to SAV beds. Harmful effects would occur if sediment covers fish spawning grounds and bottom areas critical to juveniles. However, with the DMMP alternative, runoff of dredged material onto SAV would be reduced through the use of training levees and total confinement of some PAs.

ES.6 WILDLIFE RESOURCES

Impacts to terrestrial wildlife species or habitats within or near the project area as a result of the No-Action or DMMP alternatives may include short-term effects resulting from the noise and physical disturbance during dredging activities, as well as long-term effects resulting from habitat modification.

Long-term effects to terrestrial wildlife species and habitats would occur primarily as a result of habitat modification. Of 35 bird rookeries occurring on tidal flats and emergent dredged material PAs adjacent to the GIWW, 23 are located in existing or proposed PAs. The majority of PAs currently have bird management plans for dredging, conveyance, and placement operations, which generally allow for the avoidance of placement in major rookeries and include restrictions on placement of material during the breeding season in those areas periodically used.

The DMMP alternative was designed to improve colonial waterbird habitat, and thus, is an improvement over the No-Action alternative. While this cannot be quantified, the DMMP followed the recommendations of the latest versions of the Shorebird Management Plan and the Padre Island National Seashore Management Plan, available to the ICT to the extent practicable.

ES.7 THREATENED AND ENDANGERED SPECIES

Plants

Based on available records, no Federally or State-listed plant species occur within 2 miles of the proposed project activities. No suitable habitat for the species discussed in Section 3.7.1 exists on any of the existing or proposed PAs. Therefore, no impacts to protected plant species are anticipated from either the No-Action or DMMP alternatives.

Wildlife

The No-Action and DMMP alternatives would result in little or no immediate direct impacts to any species or designated Critical Habitat protected by the Endangered Species Act within the project area. Changes to habitats, over time, would be expected as a result of various natural influences. In general, dredged material placement activities associated with the No-Action and DMMP alternatives may affect habitats used by the piping plover and state-threatened colonial waterbirds, and maintenance dredging may impose minor, temporary impacts on sea turtles.

Both the No-Action and DMMP alternatives may have immediate short-term impacts on selected species and/or habitats in the vicinity of the project. Some species may be temporarily displaced due to project disturbances. Abundant suitable habitats occur within the vicinity of the project to allow for such temporary displacement and most disturbances would be of a short duration to allow for a prompt return to pre-project patterns. Increased boat traffic within the project area during maintenance dredging and placement may also temporarily disturb various aquatic species and may increase erosion/sedimentation in some areas. However, these impacts are considered short-term and generally insignificant.

Two State-listed amphibian species, the south Texas siren and the black-spotted newt, are known to occur within the project area. These freshwater species would not be affected by the project.

Birds

Several species of birds that receive protection at the Federal or State level are listed as potentially occurring within the project area counties. The primary direct impact would be from disturbance during dredging and placeme ities that may cause roosting birds to be temporarily displaced. Such activities are short-term and periodic, and abundant suitable habitats occurring within the Laguna Madre system would allow for short-term displacement. Specific potential impacts to those protected avian species most likely to be impacted by the project are described below.

Piping Plover

Although approximately 6,588 acres under the No-Action alternative and 6,210 acres under the DMMP alternative of piping plover Critical Habitat would be affected by project activities (primarily placement of dredged material), the No-Action and DMMP alternatives should not directly affect the piping plover. Because of the limited amount of suitable habitat on active PAs and the great amount of suitable habitat adjacent to these PAs, impacts would be minimal. No Critical Habitat in Reach 1 will be impacted by placement of dredged material. Under the DMMP, levees would be built on some PAs, such as PA 176, which will contain or train the material away from suitable habitat areas. FWS will be contacted prior to levee construction at PA 176 to ensure no impacts to the piping plover would occur.

Within Reach 2, six PAs fall within Critical Habitat unit TX-3 (subunit 3) but do not appear to contain the primary constituent elements needed for piping plover use. The PAs will be examined more

closely before placement occurs in this Reach. All PAs within Reach 3 coincide with Critical Habitat unit TX-3 (subunit 3). No changes are proposed for PAs within this reach under the DMMP alternative. No impacts are anticipated from either alternative in Reach 3, since the PAs do not appear to contain the primary constituent elements needed for piping plover use.

Piping plovers were rarely, if ever, observed to use the PAs within reaches 4, 5, and 6; therefore, impacts to the piping plover from direct project activities within this reach are expected to be negligible. With the exception of PA 226, none of the designated PAs fall within designated Critical Habitat.

State-Threatened Colonial Waterbirds

Three State-threatened colonial waterbirds, the white-faced ibis, reddish egret, and sooty tern, are known to nest on dredged material PAs within the project area. Neither the No-Action nor the DMMP alternative should directly impact these State-listed waterbirds because they are mobile enough to avoid direct impacts from dredged material placement. Under the DMMP alternative, impacts to these species would be lessened by various aspects of the plan, including avoiding islands or portions of islands on some PAs where birds are nesting; building up or reinforcing emergent habitats on several PAs for bird use; or avoiding placement activities during the primary nesting season.

Fish

No Federally listed and only three State-listed species (opossum pipefish, river goby, and blackfin goby) of fish are known to occur within the project area counties, none of which should be impacted by either alternative.

Mammals

The No-Action and DMMP alternatives should have no impacts on the West Indian manatee, or on any Federally or State-listed terrestrial mammals potentially occurring within the project area counties.

Reptiles

The loggerhead, Kemp's ridley, and green sea turtles are the most likely of the five Federally and State-listed sea turtles to occur within the project area. If sea turtles occur in the project area they may be negatively impacted by dredging activities. Dredged material placement would increase turbidity in the project area, but sea turtles are mobile enough to avoid disturbed sites. Project impacts would be temporary and local in nature. Cutterhead suction dredges would be used which move very slowly and can be avoided by all species of sea turtles. Since all dredging of the project area would be performed by cutterhead dredges rather than hopper dredges, no impacts to sea turtles from maintenance dredging operations are anticipated.

The No-Action and DMMP alternatives should not affect the American alligator, since they would likely avoid locations where dredging and activities were actively occurring.

Mollusks

The No-Action and DMMP alternatives should have no impacts on the Texas hornshell, an extremely rare candidate species known only from the Rio Grande system.

ES.8 HAZARDOUS, TOXIC AND RADIOACTIVE WASTE

The impacts from hazardous material use and handling during dredging activities associated with the project pose a minimal risk of impacts to the environment. Typical impacts may include leaks or small spills associated with excavation and dredging equipment.

ES.9 AIR QUALITY

Because the amount of dredging for the preferred alternative is expected to be the same as or slightly less for current activities, air contaminant emissions from the preferred alternative would result in approximately the same or slightly less annual average emission rates and in minor short-term impacts on air quality in the immediate vicinity of the dredged site.

ES.10 NOISE

Noise from dredging activities would essentially be the same under either the No-Action alternative or the DMMP alternative. The DMMP alternative is not expected to increase noise levels above those of the current dredging and placement activities.

ES.11 CULTURAL RESOURCES

It is anticipated that maintenance dredging along the Laguna Madre section of the GIWW under either the No-Action or DMMP alternative will have no adverse impacts on terrestrial cultural resource sites. No recorded terrestrial archeological sites near the dredged channel or the PAs were identified. There are also no recorded shipwrecks in the vicinity of the new PAs; even though there is a potential for unrecorded wrecks to be present in some of these areas.

ES.12 SOCIOECONOMICS

The effects on employment and economics or the effects on population and community cohesion from the DMMP alternative would be equivalent to those described for the No-Action alternative.

Dredging and placement activities under the No-Action and DMMP alternatives would have little effect on recreation and tourism within the project area. However, loss of Coastal (fishing) Cabins in some of the PAs will be an effect from the DMMP alternative.

Land Use

No impacts to land use are anticipated from the No-Action alternative. The DMMP alternative would not be expected to affect land use, since all proposed new and expanded PAs are located entirely within the waters of the ULM and LLM.

Environmental Justice

The project would be situated entirely within Laguna Madre. No land uses would be altered and there would be no changes that would impinge upon the current life styles and habits of the local residents. The DMMP alternative would not create disproportional impact on any segment of the surrounding communities.

[This page intentionally left blank.]

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

LIST OF FIGURES

LIST OF TABLES

LIST OF TABLES (Continued)

LIST OF TABLES (Continued)

[This page intentionally left blank.]